**Making Gametes**

The dihybrid cross, or any multigenic cross (cross with multiple genes involved) is just like any regular cross. Just do the Punnett square properly and the answers show themselves to you.

The MOST IMPORTANT step is to have the right gametes lined up.

Remember, each parent donates one of a set of genes. They can either donate one allele, or the other for each gene but they must donate one of each gene.

If a plant is RrGg for the Round and Green genes, it can make the following gametes:

RG Rg rG rg

**What gametes would the following parents make?**

YYbb \_\_\_\_\_\_\_\_\_\_\_\_\_

yyBb \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

YyBb \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Aa:

How many gametes can be made?\_\_\_\_\_\_\_\_\_

AaBb:

How many gametes can be made?\_\_\_\_\_\_\_\_\_

AaBbCc :

How many gametes can be made?\_\_\_\_\_\_\_\_\_

DdEeFfGg

How many gametes can be made?\_\_\_\_\_\_\_\_\_

Notice a trend? Write it down here:

What about these cases?

AA

How many gametes can be made?\_\_\_\_\_\_\_\_\_

aabb

How many gametes can be made?\_\_\_\_\_\_\_\_\_

AABb

How many gametes can be made?\_\_\_\_\_\_\_\_\_

ccddEe

How many gametes can be made?\_\_\_\_\_\_\_\_\_

LlmmNNOoPpQq

How many gametes can be made?\_\_\_\_\_\_\_\_\_

Notice a trend?

**To determine the number of gametes that an organism can produce, raise 2 to the power of the number of heterozygous genes.**

**# gametes = 2# het genes**

AAbbcc = 0 heterozygous = 20 = 1 possible gamete (Abc)

AaBbCCddEe = 3 heterozygous = 23 = 8 possible gametes

(ABCdE, ABCde, AbCdE, AbCde, aBCdE, aBCde, abCdE, abCde)

Pretty cool, eh?